Amendments to the Specification:

Please replace paragraphs [0010], [0012], [0015], [0017], and [0018] with the following amended paragraphs:

[0010] For a more detailed description of the embodiments, reference will now be made to the following accompanying drawings:

Figure 1 illustrates a flowbore fluid temperature control system; ~~and~~

Figure 2 illustrates a flat view of the inside surface of an optional ratchet sleeve in one of the embodiments of the apparatus for changing wellbore fluid temperature.~~;~~

Figure 3 illustrates a fluid pump used with the flowbore fluid temperature control system;

Figure 4 illustrates a poppet valve that may be used in the flowbore fluid temperature control system, the poppet valve also showing an orifice;

Figure 5 illustrates a reduced diameter flow path that may be used in the flowbore fluid temperature control system;

Figure 6 illustrates a tortuous flow path that may be used in the flowbore fluid temperature control system; and

Figure 7 illustrates a single-position device adapted to create a flow restriction.

[0012] The flowbore fluid temperature control system 85 selectively affects the temperature of the fluid flowing through the flowbore of a drill stem by controlling the fluid pressure and flow rate of the flowbore fluid. FIGURES 1 and 2 show an embodiment of a flowbore fluid temperature control system 85. FIGURE 1 illustrates a cross-section view of a portion of the sub 75. As shown, sub 75 comprises a body 77 as well as a flowbore 79, which is a continuation of the flowbore of the drill string. Sub 75 also comprises the flowbore fluid temperature control system 85 that selectively affects the temperature of the fluid flowing through the flowbore 79 as designated by arrow 86. The flowbore fluid temperature control system 85 comprises a valve mechanism 87 that adjusts the fluid flow through the flowbore 79. The valve mechanism 87 as shown in FIGURE 1 is a multi-position valve mechanism comprising a valve sleeve 91 engaged with the inside of the sub body 77 by threads 93. The outside of the sleeve 91 forms an annulus ~~93~~ 94 with the inside of the sub body 77. The valve sleeve 91 also comprises flow ports 95 that allow fluid flow through the sleeve 91 and into the annulus ~~93~~ 94 as designated by arrows 97. Within the valve sleeve 91 is a piston 99 that slides to control fluid flow through the flow ports 95.

The piston includes seals 101 that prevent fluid flow across the seals 101 between the outside of the piston 99 and the inside of the valve sleeve 91. The piston 99 controls fluid flow through the valve sleeve 91 by selectively opening and closing fluid flow through the flow ports 95 as the piston 99 slides within the valve sleeve 91. The valve sleeve 91 also includes a vent port 103 that allows the pressure inside of the valve sleeve to adjust with the movement of the piston 99.

[0015] As shown in FIGURE 1, the flowbore fluid temperature control system 85 further comprises an actuator mechanism 89, which comprises a spring 117 adapted to compress with the movement of the piston 99. The actuator mechanism 89 may also be comprise any other type of actuator for controlling the valve mechanism 87. For example, the actuator mechanism 89 may comprise a mechanical actuator such as a spring, an electrical actuator such as an electric motor, or a hydraulic actuator such as a hydraulic piston. The actuator mechanism ~~8~~ 89 may also be an apparatus that places the ball, sleeve, bar, or other single position restrictive device into the flowbore.

[0017] The operating system also selectively decreases the fluid pressure within the flowbore 79. Compressing the spring 117 creates a second load on the piston 99 from the spring 117. A decrease in the fluid pressure within the flowbore 79 allows the spring 117 to expand and thus move the piston 99 in the opposite direction of the fluid flow 86. As the spring 117 moves the piston 99, the piston 99 moves axially within the valve sleeve 91 and selectively closes flow ports 95 to produce a desired flow rate. Moving the piston 99 axially within the valve sleeve 91 also moves the ratchet lug 113 within the ratchet sleeve groove 107. As the spring 117 moves the piston 99 axially, the ratchet lug 113 moves to one of the first positions 109, rotating the piston 99 within the valve sleeve 91. Once the ratchet lug 113 reaches one of the selected first positions ~~111~~ 109, the piston 99 is prevented from moving further axially. Thus, any further decrease in fluid pressure within the flowbore 79 will not allow the spring 117 to move the piston 99 any further.

[0018] ~~Not shown is an~~ An operating system ~~that~~ selectively operates the actuator mechanism 89 and controls the fluid pressure in the flowbore 79. The operating system of the flowbore fluid temperature control system 85 may comprise a fluid pump 200 located in the drill string 20 or on the surface 15 that controls the fluid pressure within the flowbore 79. The operating system thus operates the actuator mechanism 89, and thus controls the position of the piston 99, by controlling the fluid

pressure within the flowbore 79. Increasing the fluid pressure within the flowbore 79 produces a first load on the piston 99 in the direction of the fluid flow 86, thus causing the piston 99 to move and compress the spring 117. As the piston 99 compresses the spring 117, the piston 99 moves axially within the valve sleeve 91 and selectively opens the flow ports 95 to produce a desired flow rate. Moving the piston 99 axially within the valve sleeve 91 also moves the ratchet lug 113 within the ratchet sleeve groove 107. As the piston 99 moves axially to compress the spring 117, the ratchet lug 113 moves to one of the second positions 111, rotating the piston 99 within the valve sleeve 91. Once the ratchet lug 113 reaches one of the selected second positions 111, the piston 99 is prevented from moving further axially to compress the spring 117. Thus, any further increase in fluid pressure within the flowbore 79 will not move the piston 99 to compress the spring 117 any further.